Alien plants of Fuerteventura, Canary Islands
Plantas extranjeras de Fuerteventura, Islas Canarias

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Abstract: The nowadays flora of Fuerteventura contains some 780 species. At least 119 species are aliens, some 150 further species of mediterranean and/or North African origin are probably introduced too. The estimated percentage of aliens therefore reaches 35 %.

Resumen: Esta publicación se ocupa de una primera colocación provisional de las plantas vasculares no indígenas de la isla Fuerteventura. Según presentes resultados, actualmente el total de las especies se aproxima a las 780. Aproximadamente 300 especies tienen su origen mediterráneo o norteafricano. Detalladamente es difícil definir su estado, si es una especie nativa o introducida.
La obra contiene una primera lista de especies de América, Asia, Australia o de origen tropical, que son neophytica (recien llegados) porque llegó a la isla después de 1500. Una segunda lista, cita especies de la zona tropical o del sur de África, algunas de éstas especies pueden ser indígenas. La tercera lista, menciona plantas cutivadas asilvestradas las cuales descienden del oeste de Asia o de Europa. La cuarta y última lista, encierra especies mediterraneas y con una distribución en África del Norte, existen problemas a la hora de definir su estado.

1. Introduction - Introducción

Fuerteventura is the second largest island of the Canary Islands. The surface covers an area of 1725 km². It is the lowest populated island of the archipelago [24 inhabitants per km²]. The shortest distance to Africa is only 100 km. As things are Fuerteventura is the oldest volcano island of the archipelago. Due to the long lasting erosion processes Fuerteventura has a smooth relief, only interrupted by the massif of the peninsula of Jandía with the Pico de la Zarza (807 m) and the massif of Betancuria (724 m). The climate is arid, only every 2-3 years there are 1-2 months showing some semiarid conditions. In general there is an average precipitation of 147 mm p.a. (HÖLLERMANN 1991). The mean average temperature is about 20°C. Small daily and yearly temperature deviations as well as no frost are characteristics of a marginal tropical climate.

Usually Fuerteventura is dealed as part of the Macaronesian region. Within this region Fuerteventura is said by KUNKEL (1993) to be part of the Central Macaronesian region. Based on comparisons of the nowadays flora of the basal regions the uniformity and the existence of this floral region is questioned by LÜPNITZ (1995). He therefore integrates the Canary Islands to the Saharo-Sindian region.

2. The development of the flora of Fuerteventura – El desarrollo de la flora de Fuerteventura

Colonizing of the island by plants is a dynamic process, which is in no way completed. The uncertainties of the classification of the species in respect to the time of introduction is relatively high, in so far a quantification is only provisory. Even the differentiation indigenous vs. adventive is problematical. The nowadays flora of Fuerteventura contains more than 300 species of mediterranean and/or North African origin, whereas just these species are dominating in the vegetation of the lower altitudes. Most of them are weeds or ruderals. The relatively high part of North African elements is at least partly promoted by man. Overgrazing destroyed the remnants of thermophilous shrub vegetation and promoted the desertification. Most of these plants seem to be introduced to the island after its conquest by the Europeans [at the beginning of the 15th century], some of them may be introduced already by the natives, others may be indigenious. Production of firewood and timber, overgrazing by goats caused during the last centuries a change in vegetation as well as the exploitation of ground water during this century. Nowadays urban spread and new roads reduce many areas grown by endemic plants.
During the last century nutrition plants and useful plants were first of all introduced to Fuerteventura. Together with these plants many weeds have been introduced unintentionally. Some of the useful plants run wild and became part of the flora e.g. the Opuntia and Agave species. During the second half of the 20th century the whole collection of the subtropical gardens has been imported. Irrigated areas around the hotels and borders along the streets are nowadays the main source for aliens.

3. State of the art – El estado de las especies

In contrary to the other Canary Islands the knowledge of the flora of Fuerteventura is still insufficient. KUNKEL published in 1977 a checklist containing 599 species; 258 of them (43,1 %) are classified as adventive or possibly introduced. As stated above the classification as adventive is not to prove in any case and therefore to some extend speculative. In 1993 KUNKEL reports 560 species and [only] 160 „introduced elements“ (27,6 %). Reasons for the reduction in the number of imported species are not given.
HANSEN & SUNDING (1993) reported 667 taxa for Fuerteventura without any differentiation between indigenious and alien. Our checklist contains some 780 species (BRANDES 2000).

Differentiations based on the origin are not possible in every case as already mentioned in chapter 2. But it is sure that taxa originating from far continents (South and Central America, Australia, East Asia) are aliens. Most of them are deemed to be neophytic, because they have been introduced after the discovery of the respective sea-routes. A classification based on the degree of naturalization is not yet possible due to lack of ecological information. There is some need for further investigation, especially on the naturalization of trees and shrubs.

4. Checklist of plant species running wild introduced from America, Asia, Australia, and also of pantropical origin – Lista de las especies asilvestradas de América, Asia, Australia y orígenes tropicales:

Acacia cyanophylla
Acacia cyclops
Acacia farnesiana
Acacia saligna
Acanthoxanthium spinosum
Agave americana
Agave attenuata
Agave fourcroydes
Agave sisalana
Albizia lophanta
Amaranthus deflexus
Amaranthus muricatus
Amaranthus viridis
Arundo donax
Asclepias curassavica
Aster squamatus
Atriplex semibaccata
Atriplex suberecta
Austrocylindropuntia cylindrica
Austrocylindropuntia exaltata
Bidens aurea
Bidens pilosa
Bromus willdenowii
Caesalpinia gillesii
Caesalpinia spinosa
Cassia bicapsularis
Cassia tomentosa
Casuarina equisetifolia
Chenopodium ambrosioides
Chenopodium giganteum
Conyza bonariensis
Coronopus didymus
Cucurbita pepo
Cyperus articulatus
Cyperus peruvianus
Cyperus rotundus
Datura innoxia
Datura metel
Datura stramonium
Dichondra micrantha
Eucalyptus camaldulensis
Euphorbia prostrata
Euphorbia pucherrima
Euphorbia repens
Euphorbia serpens
Furcraea foetida
Gnaphalium pensylvanicum
Gossypium herbaceum
Helianthus annuus
Heliotropium curassavicum
Hylocereus undulatus
Ipomoea indica
Lantana camara
Lycopersicon esculentum
Maireana brevifolia
Mirabilis jalapa
Morus nigra
Musa acuminata
Nicotiana glauca (Zoom)
Nicotiana tabacum
Oenothera rosea
Opuntia dillenii

Opuntia ficus-indica
Opuntia tomentosa
Opuntia vulgaris[= Opuntia spec. (KUNKEL 1977) ?]
Oxalis latifolia
Parkinsonia aculeata
Phoenix dactylifera
Punica granatum
Salpichroa origanifolia
Schinus molle
Schinus terebinthifolius
Sclerophylax spinescens (Zoom)
Sesuvium portulacastrum
Solanum tuberosum
Stenotaphrum secundatum
Tropaeolum majus
Washingtonia cf. robusta
Zea mays

Notes:
(1) Nicotiana glauca is the only invasive plant of greater importance (see BRANDES & FRITZSCH 2000).
(2) Xanthium strumarium ssp. italicum is probably also originating from America.

5. Plant species running wild introduced from tropical and South Africa – Especies asilvestradas de la región tropicana y Sudafricana:

Aloe vera [= A. barbadense (KUNKEL 1977)]
Anredera cordifolia
Aptenia cordifolia
Calotropis procera
Carpobrotus edulis
Cassia didymobotrya
Catharanthus roseus
Commicarpus helenae (Zoom) [? = Boerhavia verticillata (HOHENESTER & WELß 1993)]
Cyperus longus
Cyperus mundtii
Gazzania spec.
Gomphocarpus fruticosus
Ipomoea batatas
Ipomoea cairica
Oxalis pes-caprae (Zoom)
Oxalis purpurea
Pelargonium inquinans x zonale
Pelargonium x hybridum
Pennisetum setaceum
Ricinus communis
Zantedeschia aethiopica

Note:
Their is also some evidence, that Mesembryanthemum crystallinum, which is nowadays very frequent, may be introcuded from South Africa as well. However that may be, Mesembryathemum crystallinum was promoted by man, especially for producing soda.

6. Cultivated plants originating from West Asia and Europe and probably running wild – Plantas cultivadas que descienden de la zona del oeste de Asia o de Europa, tal vez asilvestradas:

Allium cepa
Allium sativum
Althaea rosea
Avena sativa
Brassica cf. oleracea
Centranthus ruber
Ceratonia siliqua
Cicer arietinum
Coriandrum sativum
Cymbalaria muralis
Lactuca sativa
Lens culinaris
Medicago sativa
Nerium oleander
Papaver setigerum
Papaver somniferum
Petroselinum crispum
Pisum sativum
Prunus dulcis
Sinapis alba

7. Checklist of further species probably introduced to Fuerteventura [mostly weeds and ruderals from the Mediterranean Area and North Africa] compiled with special regard to KUNKEL (1977) – Lista de otras especies que pueden ser nativas o bien haber sido introducidas en Fuerteventura (en general malas hierbas o ruderales) por regiones mediterraneas o Nortafricanas (véase también KUNKEL 1977):

Achyranthes aspera
Achyranthes aspera L. var. sicula L.
Agrostis castellana
Agrostis semiverticillata
Amaranthus lividus
Anacyclus radiatus
Anagallis arvensis
Anchusa azurea
Andrachne telephioides
Anthemis arvensis
Anthemis cotula
Atriplex tatarica
Avena fatua
Borago officinalis
Briza maxima
Bromus diandrus
Bromus lanceolatus
Bromus rigidus
Calendula bicolor
Capsella bursa-pastoris
Carduus pycnocephalus
Carduus tenuiflorus
Carthamus lanatus
Carthamus tinctorius
Centaurea calcitrapa
Centaurea melitensis
Cerastium glomeratum
Chamomilla recutita
Chenopodium album
Chenopodium murale
Chrysanthemum coronarium
Cichorium endivia ssp. divaricatum
Coleostephus myconis
Convolvulus althaeoides
Convolvulus arvensis
Coronopus squamatus
Cynara cardunculus
Cynodon dactylon
Dittrichia viscosa (?)
Echinochloa crus-galli
Emex spinosa
Erodium botrys

Erodium cicutarium
Erodium moschatum
Eruca vesicaria ssp. sativa
Euphorbia exigua
Euphorbia helioscopia
Euphorbia peplus
Euphorbia serrata
Euphorbia sulcata
Foeniculum vulgare ssp. piperitum
Fumaria bastardii
Fumaria capreolata
Fumaria parviflora
Fumaria vaillantii
Galium anglicum
Galium aparine
Galium murale
Galium parisiense
Galium tricornutum
Geranium molle
Geranium rotundifolium
Gladiolus italicus
Glaucium corniculatum
Hedera helix
Helminthotheca echioides
Hirschfeldia incana
Hordeum murinum ssp. leporinum
Hordeum vulgare
Hyoscyamus albus
Juncus bufonius
Kochia scoparia
Lactuca serriola
Lamium amplexicaule
Lathyrus clymenum
Lathyrus sativus
Lathyrus tingitanus
Launea capitat*
Lavatera arborea
Lavatera cretica
Leopoldia comosa
Limonium sinuatum
Lolium multiflorum
Marrubium vulgare
Melilotus indica
Melilotus sulcata
Mentha x rotundifolia [KUNKEL 1977] [= M suaveolens Ehrh.]
Mercurialis annua
Moricandia arvensis
Nasturtium officinale
Ononis pendula
Ornithogalum narbonense
Oxalis corniculata
Pallenis spinosa
Papaver argemone
Papaver dubium
Papaver rhoeas
Parietaria debilis
Parietaria judaica
Phalaris canariensis
Phalaris paradoxa
Plantago albican*
Plantago major
Poa annua
Polycarpon tetraphyllum
Polygonum aviculare
Populus alba
Portulaca oleracea
Raphanus raphanistrum
Raphanus sativus
Rapistrum rugosum
Rhagadiolus stellatus
Rumex acetosella ssp. angiocarpus
Ruta chalepensis
Salvia verbenaca
Sansevieria trifasciata
Scandix pecten-veneris
Scolymus hispanicus
Scolymus maculatus
Sedum cf. dendroideum
Senecio vulgaris
Setaria adhaerens
Sherardia arvensis
Silene gallica
Silene nocturna
Silene vulgaris ssp. commutata
Silybum marianum

Sinapis arvensis
Sisymbrium officinale
Solanum luteum
Solanum nigrum
Sonchus oleraceus
Sonchus tenerrimus
Spergula arvensis
Stachys arvensis
Stachys ocymastrum
Stellaria media
Taraxacum officinale
Torilis leptophylla
Torilis nodosa
Trifolium angustifolium
Trifolium stellatum
Trifolium striatum
Urospermum picroides
Urtica membranacea
Urtica urens
Verbena officinalis
Verbena supina
Veronica arvensis
Vicia benghalensis
Vicia lutea
Vicia sativa ssp. nigra
Xanthium strumarium ssp. italicum [see chapter 4]

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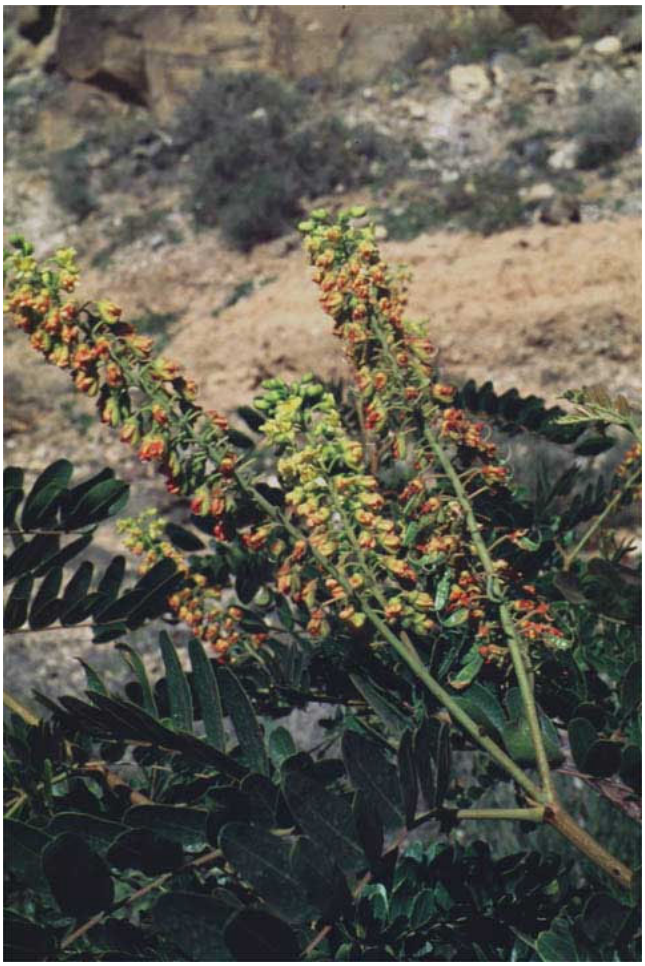

Caesalpinia spinosa

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Datura innoxia

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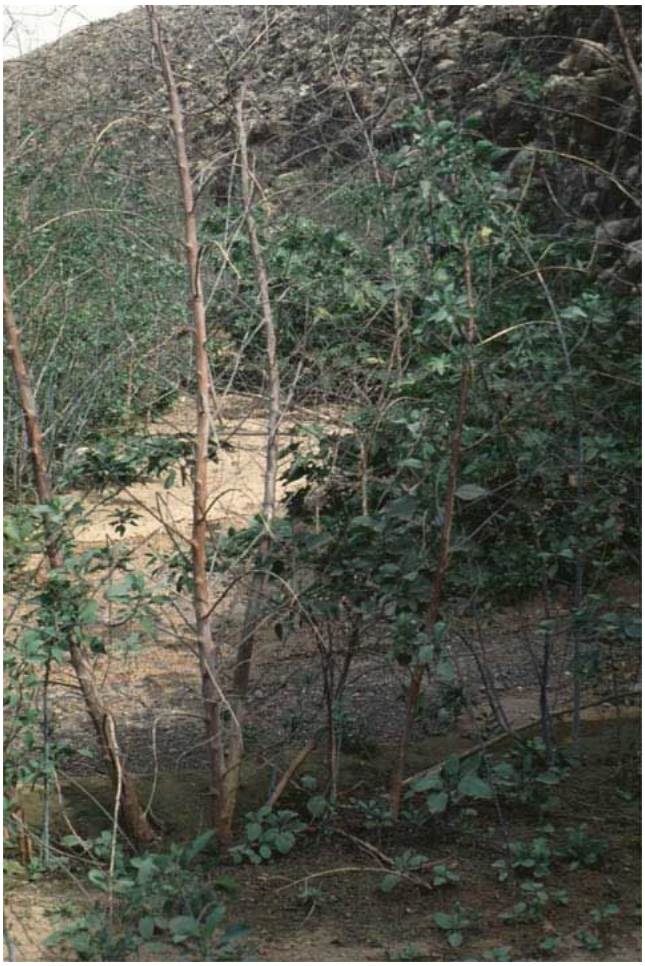

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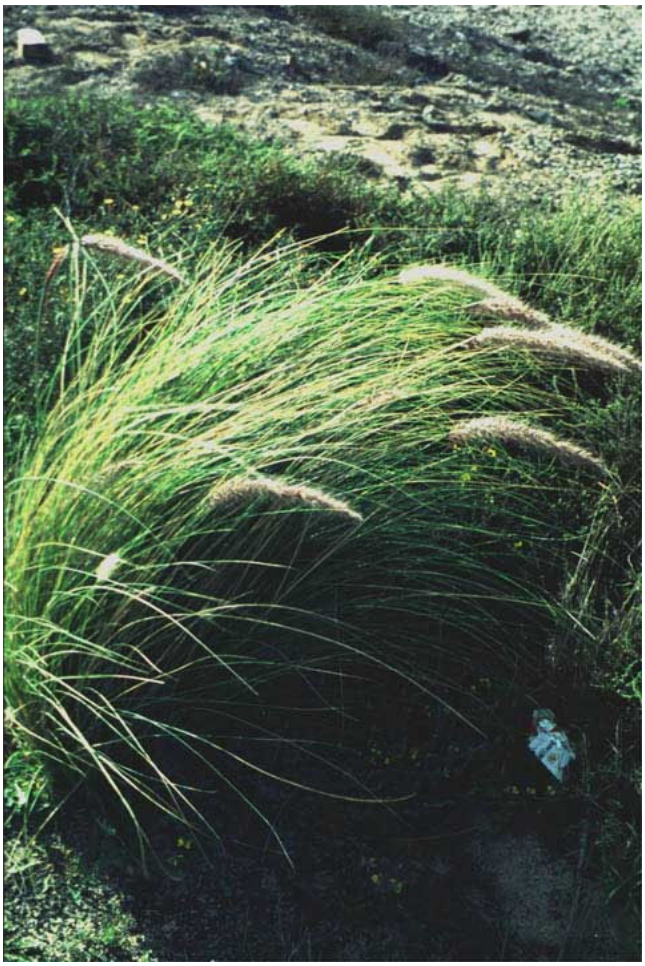

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